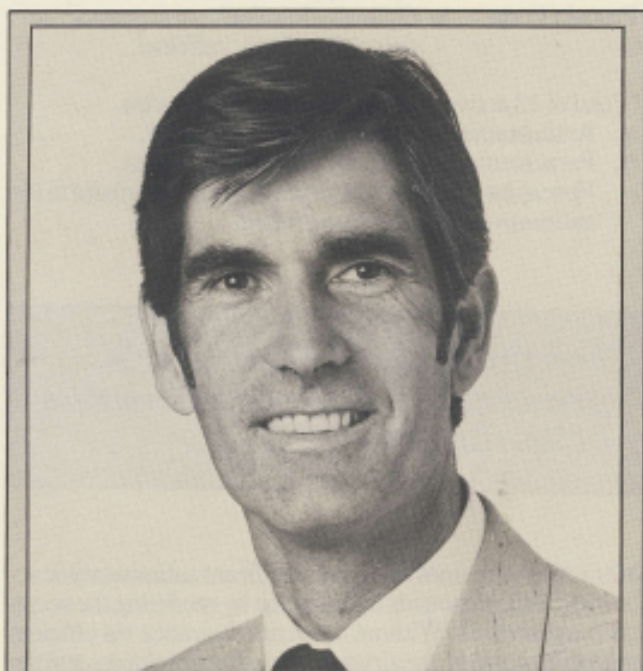


An Embarrassment of Riches or a Richness of Embarrassments*

by Mr I C Wiseman



Curriculum Vitae
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Head of the Department of Pharmacology at the P E Technicon. He received the SA Pharmacy Board's Diploma in Pharmacy in 1962 and his MSc on Acidic Non-steroidal Anti-inflammatory Agents, at Rhodes University in 1977.

He has received the SA Pharmacological Society's Internal Fellowship Award, and has presented refresher courses to doctors, pharmacists, and nurses throughout SA. He completed his 4-part continuing education course in clinical pharmacology for the SA Pharmaceutical Society in 1979.

Mr Wiseman is a member of the Scientific Advisory Board to the SA Pharmaceutical Journal and is currently researching the pharmacokinetic behaviour of digoxin in SA Population groups.

This paper was delivered at the Eastern Cape Academy Congress, April 1984

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KEYWORDS: Drug evaluation; Drug therapy; Family Practice; Pharmacology.

Summary

It has become almost impossible for the busy doctor to keep abreast of all new developments, and evaluate the claims of the drug manufacturers; it is here that the pharmacist as a member of the health team, can be of real help to the prescribing doctor. The patient will indeed also benefit. A few real-life examples are analysed to illustrate the problems especially of over-prescribing.

IN FEBRUARY this year at the meeting of the SA Pharmacy Board in Cape Town the Minister of Health stated that unless the cost of medicine to the public was reduced, the state would be forced to consider introducing a state controlled health service.

Some people believe that they can move their bodies overnight from sickness into health with pill, potion or capsule.

Today, medicine is responsible for 30-40% of the total health care bill and there is a belief that we can move our bodies overnight from sickness into health with pill and needle, potion and capsule. This is supported by the belief that health is to be found in the medicine bottles in a pharmacy.

an embarrassment of riches

Drugs have become the predominant force in health care and the spectacular beginning of the modern drug age has resulted in our being seduced by the idea that there is a pill for every ill. It is difficult to imagine what it would be like to practise medicine without the availability of antibiotics, insulin, Vitamin B₁₂ and anticonvulsants. The euphoria produced by this golden age of medicine has sometimes blinded us to the fact that all drugs, whatever their virtues, are inherently dangerous. Only when we see the cure worse than the disease itself, are we reminded again about the potency of modern medicine.

Has the doctor moved from practising the social and healing arts, to controlling his prescription pad?

As we examine some of the unfavourable 'spin-offs' of the 'golden age' of medicine such as poor prescribing habits and iatrogenic disease, we need to ask the question whether our embarrassment of medicine-riches does not sometimes become a richness of embarrassments?

PATIENT EXPECTATIONS

Melville and Johnson¹ suggest that the power base of a doctor has moved from the social and healing arts to his control over his prescription pad. Overworked doctors in the frontline of health care almost always respond by prescribing drugs when consulted, due to patient expectations and patient pressure. If the doctor offers only advice without a prescription, the doctor may feel that he is lowering himself in the eyes of the patient to the role of a counsellor or nurse.

The prescription becomes a symbol of his concern. In addition, prescription writing is ideally suited for marking the end of the consultation!

From the patient's point of view the prescription is the confirmation of illness².

Writing a prescription is an ideal way to end a consultation!

In Britain, repeat prescriptions for minor tranquillisers are habitually used by some doctors to avoid seeing patients with demanding emotional problems.³

FACTORS CONTRIBUTING TO THE COST OF MEDICINE

A significant factor, contributing to the cost of medicine in prescriptions reviewed, as well as increasing the possibility of iatrogenic disease, was the tendency to overprescribe.

Factors implicated in causing overprescribing were identified as being:

1. prescribing of polycomponent medicines
2. lack of pharmacokinetic information in various drug categories.

1. Examples of polycomponent prescribing

There is an increasing use of preparations with a multiplicity of active ingredients. The following is an example of polycomponent prescribing:

Example I

Patient M du P	=	Diagnosis: Sinusitis
Fabahistin TRT	=	mehydrolin ¹
Degoran bitabs	=	phenylpropanolamine, pheniramine ¹ , mepyramine ¹ , noscopine, terpin hydrate, paracetamol ² , caffeine ²
Propain Forte	=	diphenhydramine ¹ , paracetamol ² , codeine phosphate, caffeine ² , phenobarbitone.

(Total of 13 active ingredients in three products).

- a. Antihistamines appear four times in script.
- b. Paracetamol and caffeine each appear twice.
- c. Noscapine, codeine and terpin hydrate contribute to the antitussive and expectorant effect.

For the patient, the doctor's prescription is the confirmation of his illness

Many antihistamines also have significant antimuscarinic activity which compounds the situation by rendering the secretions more viscid. Without adequate clearance via efficient mucociliary action, the airways, the paranasal sinuses and the eustachian tubes become potential sites for infection.

Example II

The following example represents a very real, not to say, hazardous practice.

A 7-year-old girl arrived at the casualty department having had three convulsions, with the following clinical features:

Stupor, febrile, dilated pupils, hot dry skin, tachycardia, neck stiffness.

The work-up included venepuncture, X-rays, lumbar puncture to exclude meningitis, and toxicology screen of blood and urine. The eventual diagnosis was drug intoxication. Her doctor had prescribed, in syrup form:

Mysteclin-V	Stopayne
Colcaps	Nethaprin
Tixylix	

These five preparations, containing 16 active ingredients, were prescribed for hayfever, asthma, sore throat, suspected bronchitis, and a 'cold'. This prescribing of a pill for every ill produced many duplications and even quadruplications!

2. POLYCOMPONENT ANALGESICS - 'SHOTGUN REGMAKER THERAPY'

The prescribing of polycomponent analgesics occurred frequently with Syndol, Stopayne and Propain-Forte featuring significantly. It is no accident that it is the polycomponent analgesics which are chronically abused. Many contain psychoactive constituents such as codeine, phenobarbitone, meprobamate or caffeine. This form of medication has been aptly described as 'Shotgun regmaker therapy'.

Ingestion need not be high but, if regular, renal damage is likely to ensue insidiously, especially if fluid intake is low.

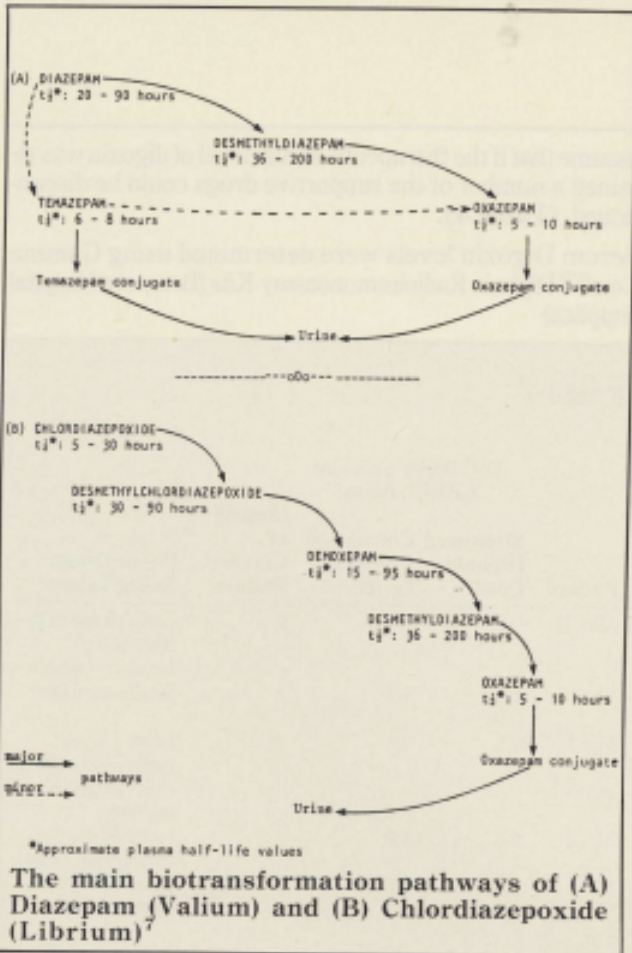
PROTOCOL FOR PREVENTION OF RENAL DAMAGE¹

1. Prescribe psychotropics separately from analgesics and discourage abuse.
2. Critically review your analgesic - and more especially polycomponent analgesic prescribing.
3. Review all regular analgesic-prescription patients - and perhaps save their kidneys.
4. Urge patients to take plenty of water with non-steroidal anti-inflammatory analgesics.
5. Never forget the insidious nature of analgesic nephropathy. Use these drugs with a sense of caution and particularly in patients with impaired kidney function.

IF PHARMACOKINETIC INFORMATION IS LACKING...

A. Benzodiazepines

Aldous Huxley once wrote "In this world where one does




not get anything for nothing, tranquillisers offer a great deal for very little". This has been taken seriously placing the benzodiazepines in the top league of prescribed drugs. At times there appears to be confusion about the benzodiazepines as pharmaceutical companies have promoted these products as though they are pharmacodynamically different. The real differences among the benzodiazepines lie in their pharmacokinetic differences. Often two or more benzodiazepines were prescribed together.

The following guidelines⁵ for prescription of the benzodiazepines are now widely accepted:

- the duration of therapy should be limited to a few days. The efficacy of more prolonged benzodiazepine usage has not been established;
- if anxiety is not relieved by a benzodiazepine, the diagnosis may be incorrect and what is regarded as anxiety may really be underlying depression;
- the benzodiazepines may cause sedation, impair concentration and blunt judgement. Such effects are hazardous on the roads - especially when alcohol is taken in addition.


B. Digoxin

In a study on patients receiving digoxin daily, the importance of supportive pharmacokinetic data was looked at by the author. The wide scatter of serum digoxin concentrations

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
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when viewed with respect to the daily dose of the drug, demonstrated that knowledge of the daily dose is not a precise enough measure to predict the state of digitalisation of the patient (Table 1).

Number of Patients	Dose	Total Body Clearance (Cl_B) mls/min	Percentage of Patients in Therapeutic Range ^b
17	0,25	118 (28) ^a	70,5
12	0,125	108 (25)	41,6

a. Mean (Standard deviation)
b. 0,8-2,0 ng/ml

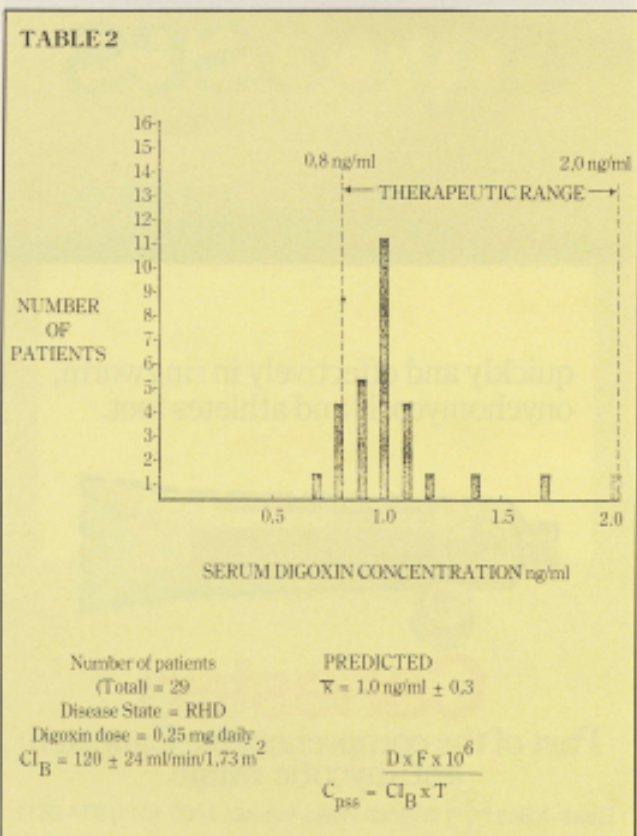
In 1982, 176 000 prescriptions were written for digoxin in private practice in South Africa and with a view to improving patient care it is important that supportive pharmacokinetic data be utilised.

The predictive capability of the equation

$$C_{\text{pss}} \text{ ng/ml} = \frac{\text{Dose} \times F \times 10^6}{Cl_B \times T \text{ (mins)}} \quad (1)$$

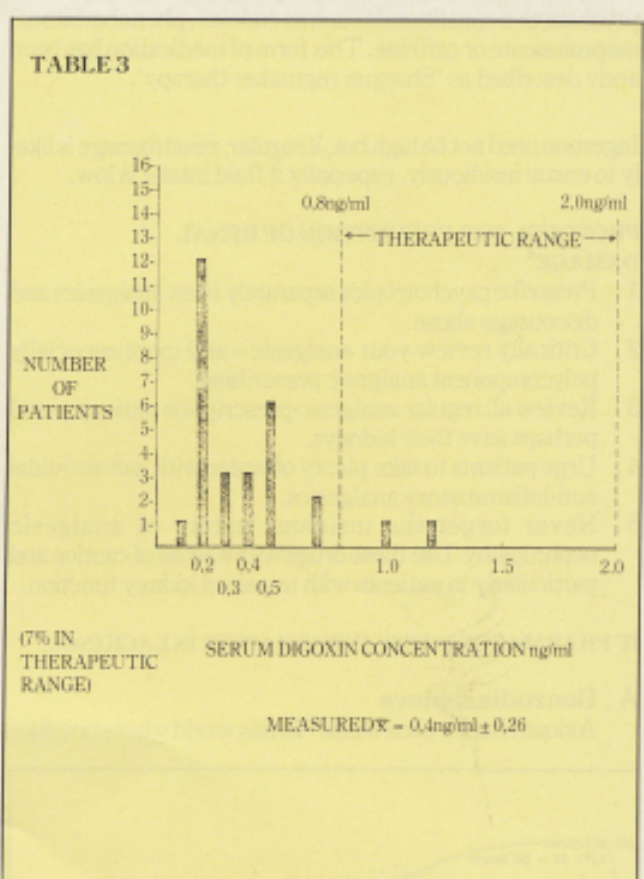
was studied by the author. This equation which allows for the mass, sex and age of the patient in the calculation, showed a correlation co-efficient of 0,79. This was obtained by comparing the predicted serum digoxin level from equation (1) with measured levels determined by the radio immunoassay technique.

A separate study was then carried out on 29 rheumatic heart disease patients who were each receiving 0,25 mg daily. The Cl_B was 120 (24) ml/min. Using equation (1), the predicted serum digoxin levels were calculated with a mean of 1,0 ng/ml \pm 0,3 (Table 2) with 96,6% of patients being found to be theoretically within the therapeutic range. The measured



serum digoxin levels were then compared and only 7% (2 out of 29) of the patients were found to be in the therapeutic range (Table 3). Ironically, one of the patients was hypokalaemic and was receiving metoclopramide.

In addition the 29 patients were each receiving an average of 1,7 drugs for congestive heart failure. It is reasonable to



assume that if the therapeutic serum level of digoxin was attained a number of the supportive drugs could be discontinued. (Table 4).

Serum Digoxin levels were determined using Gamma Coat⁽¹²⁵⁾ Digoxin Radioimmunoassay Kits (Benmore Hospital supplies)

Patient	DIGOXIN SERUM LEVEL ng/ml		Degree of Cardiac Failure	Other Drugs Being Taken
	Measured Digoxin Level	Calculated Digoxin Level		
Miss H	0,6	0,5	0	Lasix 40 mg daily, Slow-K ii tds.
Mr S	0,2	1,1	1	Isoptin 80 mg tds, Moduretic ii daily.
Mrs J	0,2	2,0	4	Lasix 250 mg daily, Moduretic ii daily, Isoptin 80 mg daily.
Mr M	0,5	1,0	1	Lasix 80 mg daily, Navidrex-Kii daily
Mr A	0,2	0,8	1	Lasix 80 mg daily, Slow-K ii tds.

HEALTH CARE TEAM APPROACH

Pharmacology has taken quantum leaps during the past 25 years and with the vast quantity of drugs available today it has become very difficult, if not virtually impossible for the busy practitioner to keep abreast of new developments.

An important source of information for the doctor comes in the form of promotional material from drug manufacturers. It is often very difficult for an individual practitioner to make an informed rational evaluation of their claims, despite all his years of training.

It is a good remedy sometimes to use nothing
(Hippocrates)

In a health team approach the pharmacist graduating today is able to provide support having completed 2½ courses in pharmacology. The health team approach to health care for South Africa where the patient benefits from the combined expertise of doctor and pharmacist, would be ideal. The personal responsibility for the therapeutic decision would be that of the doctor with the pharmacist monitoring therapy and recommending where appropriate. The monitoring role of the pharmacist has been shown to reduce the length of stay in hospital by two days in a pilot study carried out on 77 patients suffering from pyelonephritis. Pharmacist consultations were successful in improving drug prescribing resulting in significant cost savings⁶.

In the field of anticonvulsant therapy where one drug at correct serum levels will most times control seizures, the monitoring role of the pharmacist can be significant. Data such as when to take the blood sample, when will steady state be reached, dosage adjustment as well as factors affecting serum levels, are essential if economically effective medicine is to be practised.

CONCLUSION

Hippocrates suggested over 2 000 years ago that it is a good remedy sometimes to use nothing. This is acknowledged and practised but it is also prudent to utilise the medicine-riches that abound, to the advantage of the patient.

Patients should be encouraged to ask for more advice and demand fewer prescriptions

Medicine costs can be reduced and the threat of iatrogenic disease is lessened if the tendency to overprescribe can be contained. It is also possible to contribute to the quality of patient care and reduce costs when pertinent pharmacological and pharmacokinetic data are available. The Health Team concept makes this possible.

And we should not forget the patient. In this era of polypharmacy in which we live where there is an inordinate desire to take medicine, it is important that an awareness be created among laymen to encourage patients to ask for more advice and demand fewer prescriptions... and may I suggest that doctors offer more advice and write fewer prescriptions?

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